Before the
Federal Communications Commission
Washington, DC 20554

In the Matter of	)	
	)	
Amendment of Part 2 of the Commission's	)	ET Docket No. 00-258
Rules to Allocate Spectrum Below 3 GHz for	)	
Mobile and Fixed Services to Support the	)	
Introduction of New Advanced Wireless	)	
Services, Including Third Generation Wireless	)	
Services	)	

To: The Commission

COMMENTS OF CINGULAR WIRELESS LLC

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SUMMARY

In order for the United States to remain at the forefront of wireless technologies and services worldwide, the Commission should immediately allocate at least 160 MHz of additional spectrum below 3 GHz to satisfy the spectrum demands for IMT-2000 services, consistent with the recommendation of the ITU. While the record in this proceeding already fully demonstrates the critical need for additional spectrum, the Commission need look no further than the record prices spent for spectrum licenses in recent auctions in the United States (nearly $17 billion) and in Europe (more than $44 billion in Germany alone), and the spectacular growth of wireless subscribers to levels exceeding 110 million domestically, as further evidence of this critical need.

The United States must act expeditiously to allocate additional spectrum for 3G services and hold 3G spectrum auctions leading to the issuance of licenses. Any delay will deprive customers of services and cause the United States to lose ground to its European counterparts in developing new and innovative services. All of the European Union member countries were required to issue licenses for 3G systems by January 2001. By contrast, the United States is not scheduled to assign licenses until September 2002 — well over a year and a half after its EU counterparts. Because time is of the essence, the Commission must make the rapid deployment of 3G technologies and services in the United States its top priority.

Cingular supports the adoption of a flexible allocation approach for spectrum set aside for 3G purposes, taking into account potential interference scenarios, that will allow market forces to guide licensees in deciding which services to offer and which technologies to employ on this spectrum. The desired 160 MHz of spectrum will only be sufficient if the selected candidate bands are cleared of any encumbrances by a date certain. The Commission should not apply the 45 MHz CMRS spectrum cap to any new spectrum allocation because the very purpose of any 3G spectrum allocation is to provide access to more spectrum than is currently available for today's systems.

Cingular agrees with the Commission's tentative conclusion that no further allocations can be made in already allocated bands in which advanced services currently can be provided, given the variety of uses these bands are already accommodating. Instead, the bulk of the spectrum allocated for 3G services should come from one of two bands — the 1710-1850 MHz band or the 2500-2690 MHz band — consistent with the United States' position at WRC-2000. Failure to use either of these bands could seriously harm the credibility of the United States with regard to future international spectrum allocations. Cingular's suggestions regarding these bands can be summarized as follows:

- ***1710-1850 MHz***. This Federal Government spectrum offers great potential for advanced services if it can be cleared. Cingular does not believe that 3G services can *share* this spectrum with the incumbent government users. Nevertheless, Cingular is fully aware of the financial and technical difficulties and national security concerns inherent in relocating government facilities in these bands. A solution to the problem of relocation funding may be to adopt a mechanism under which revenues to reimburse relocating agencies would come directly from revenues generated in an auction for licenses to use the cleared frequencies. This will

probably necessitate an amendment to the auction statute. Such a procedure would avoid having the wireless industry negotiate relocation terms with government agencies, thus eliminating national security problems while providing the necessary relocation funding.

- ***2500-2690 MHz***. If clearing the Federal Government bands proves impractical, the bulk of 3G spectrum could be accommodated by usage of the 2500-2690 MHz band if most of the incumbent use is refarmed and relocated. If it is possible to relocate ITFS licensees to another band in which they would enjoy equal or better ITFS coverage and capacity, Cingular believes that improvements in technology could enable MMDS licensees to increase the spectral efficiency of their operations, enabling them to provide the same services in their originally-allocated 70 MHz of spectrum. This scenario would free 120 MHz of spectrum for reallocation to advanced wireless services. Because the widespread existence of ITFS/MMDS leases interweaves the interests of the ITFS and MMDS communities, however, the Commission must study the feasibility of separating these two services. While Cingular fully appreciates that refarming and relocating MMDS and ITFS licensees may not be easy, it would be simpler and easier to accomplish than the clearing of the 1.7 GHz Government bands.

Finally, Cingular believes that advanced wireless systems can successfully be deployed in the 2110-2150 MHz and 2160-2165 MHz bands. Because incumbents in these bands generally consist of commercial fixed links, the relocation issues appear to be similar to those encountered in the licensing of the PCS bands, where point-to-point microwave providers were successfully relocated. The 4, 6, 10 and 11 GHz bands could accommodate these relocating incumbents.

Spectrum is the fuel that drives the engine of growth in wireless services. The Commission must act quickly to reallocate sufficient spectrum for advanced wireless services in order to avoid stunting the growth of this vibrant industry.

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COMMENTS OF CINGULAR WIRELESS LLC

Cingular Wireless LLC ("Cingular"), by its attorneys, hereby submits these comments in response to the Commission's *Notice of Proposed Rule Making* in this docket.[1] Cingular supports the prompt designation of additional spectrum for new advanced wireless systems,[2] commonly referred to as International Mobile Telecommunications-2000 ("IMT-2000") or Third Generation ("3G") systems.[3]

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[1] *Notice of Proposed Rule Making*, FCC 00-455 (rel. Jan. 5, 2001) ("*NPRM*"), *summarized*, 66 Fed. Reg. 7438 (Jan. 23, 2001). Cingular is the new joint venture between the domestic wireless operations of SBC Communications, Inc. ("SBC") and BellSouth Corporation ("BellSouth"), and provides wireless voice and data Commercial Mobile Radio Services ("CMRS") to more than 19 million customers in 38 states, the District of Columbia and two U.S. territories.

[2] These efforts are consistent with the Commission's obligations under Section 706 of the Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 153 (1996) (reproduced in the notes under 47 U.S.C. § 157).

[3] First generation ("1G") mobile telephone network technologies consist of analog cellular systems that allow two-way voice communications, circuit-switched data transmission, and, through an upgrade, packet data services. For several years, U.S. cellular and personal communications service ("PCS") operators have been deploying second-generation ("2G") networks, which utilize digital technologies to offer such voice services as voice mail and caller ID and permit packet-switched and circuit-switched data

In order for the United States to remain at the forefront of wireless technologies and services worldwide, the Commission should immediately allocate at least 160 MHz of additional spectrum below 3 GHz for IMT-2000 services, consistent with the recommendation of the International Telecommunication Union ("ITU"). Cingular supports the adoption of a flexible allocation approach for this spectrum, taking into account potential interference scenarios, that will allow licensees to determine the services to be offered and the technologies to be used over this spectrum. For this 160 MHz of spectrum to be sufficient, it is essential that any of the selected candidate bands be totally cleared of incumbent uses, if any, by a date certain. Different considerations apply to each of the candidate bands under consideration, however, as discussed in Section III, below.

I. THE NEED FOR ADDITIONAL SPECTRUM

A. Existing Spectrum Allocations Are Being Used As Efficiently As Possible Under Current FCC Rules

The Commission seeks information regarding the ability of existing 1G and 2G systems to use existing spectrum allocations to provide advanced services, positing that if sufficient capacity exists a service provider could implement advanced wireless services on a portion of their current spectrum holdings.[4] Cingular believes that there is, and will continue to be, a migration towards advanced services from 1G and 2G system service providers. As the Commission notes, cellular and PCS operators have already begun

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transmission at improved speeds. 3G technology promises Internet access with dramatically higher speeds and is expected to offer a variety of advanced wireless services, including video and audio streaming. *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993; Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, Fifth Report*, FCC 00-289 at 35-36 (rel. Aug. 18, 2000) ("*Fifth Competition Report*").

[4] *NPRM* at ¶ 22.

to introduce mobile data services and other advanced wireless services demanded by consumers.[5] In particular, carriers in the cellular bands have been upgrading their analog networks to digital networks and are encouraging customers to make a switch to digital. Digital technology provides cellular carriers with the ability to offer consumers a clearer signal and new advanced services, including wireless data, as well as increased capacity to more effectively compete with PCS carriers.

As the Commission appears to recognize, however, capacity constraints limit the extent to which new services can be offered within a specific time frame.[6] In the case of cellular providers, these constraints are magnified because a complete switch-over to more spectrally-efficient digital technologies is precluded by Commission policies that continue to bind cellular carriers to provide analog service.[7] In addition, newly auctioned spectrum is likely going to be used by carriers to only meet capacity demands of 2G systems,[8] because the majority of currently allocated spectrum in the cellular and PCS bands is

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[5] *See id.* at ¶ 12.

[6] *See id.* at ¶ 22.

[7] *See Amendment of the Commission's Rules to Establish New Personal Communications Services, Second Report and Order*, 8 F.C.C.R. 7700, 7747 (1993) ("*Broadband PCS Second Report and Order*").

[8] *See, e.g.*, Heather Fleming Phillips, "Auction of Airwaves for Wireless Phone Service Breaks U.S. Records," San Jose Mercury News (Jan. 26, 2001) (noting that spectrum acquired in recently completed C and F Block PCS reauction will be used to "give companies added capacity to handle the hordes of new customers who are signing up at record rates and talking on their phones for longer periods"); Sanford Nowlin, "Wireless Licenses Up for Grabs; FCC Begins Auction Today," San Antonio Express-News (Dec. 12, 2000) (describing the C and F Block PCS reauction as "the last chance for the key cellular providers to cement their footprint and increase their capacity") (quoting Carles Ferreiro, a wireless analyst at Frost & Sullivan in San Francisco).

insufficient to meet current needs.[9] In fact, carriers are actively looking for more spectrum to meet growing capacity demands and complete the footprints for their systems.

Moreover, the WRC-2000 recognized that incumbent operators would likely migrate to 3G, and that at least 160 MHz of *additional* spectrum would be necessary to meet demand.[10] Although wireless technologies will continue to evolve and wireless providers will endeavor to take advantage of these technologies to deploy new and advanced services, carriers can only do so much given the existing customer demand for basic services. In other words, carriers must have the capacity available to service these customers before they can provide 3G services.

B. Additional Spectrum Must Be Made Available to Sustain Growth and Support New Advanced Services

The Commission is well aware of the tremendous demand for usable radio spectrum for 3G services. In fact, former President Clinton signed an executive memorandum dated October 13, 2000, in which he stated both the need and the urgency for the United States to select additional spectrum to satisfy 3G service needs.[11] The Council of Economic Advisors ("CEA") has also recognized the importance of making sufficient spectrum available to satisfy 3G demands.[12] Moreover, the amounts bid for licenses in

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[9] *See, e.g.*, Comments in Response to RM-9920 of Verizon Wireless at 3; AT&T Wireless Services, Inc. ("AT&T Wireless") at 2; Reply Comments of BellSouth at 3.

[10] *See* Resolution 223, "Additional Frequency Bands Identified for IMT-2000," Provisional Final Acts of the World Radiocommunication Conference (Istanbul, WRC-2000) ("WRC Resolution 223").

[11] *See* U.S. Department of Commerce, National Telecommunications and Information Administration ("NTIA"), "Federal Operations in the 1755-1850 MHz Band: The Potential for Accommodating Third Generation Mobile Systems," Interim Report at xi, 2 (rel. Nov. 15, 2000 ("Commerce Interim Report") (citing Executive Memorandum, Advanced Mobile Communications/Third generation Wireless Systems (rel. Oct. 13, 2000)).

[12] *See* Council of Economic Advisors, The Economic Impact of Third-Generation Wireless Technology (Oct. 2000).

the recent C and F Block PCS reauction in this country (nearly $17 billion), and in the recent European 3G auctions, including the United Kingdom ($32 billion) and Germany ($44.8 billion), show that the demand for this limited resource is incredible.[13] The Commission recognized this point in its *Fifth Competition Report*:

> It appears that the market value of licenses enabling use of spectrum suitable for mobile applications has been rising over the last year. For example, . . . [i]n an April 2000 auction held in the United Kingdom for spectrum to be used for 3G mobile services, winning bids averaged $4.27 per MHz-pop. In comparison, winning bids in the original A/B block auction, which closed in March 1995, averaged $0.46 per MHz-pop. *This increase in values is generally considered to result from increased predictions about future demand for mobile services, including mobile data services in particular.*[14]

Evidence of this demand is already on the record in this proceeding. The Cellular Telecommunications Industry Association ("CTIA")[15] in July 2000 sought additional spectrum for commercial wireless services and demonstrated that additional spectrum must be allocated because existing mobile allocations are insufficient for the development of 3G services.[16] Comments and reply comments submitted in response to the CTIA petition less than six months ago showed that while expected continued increases in mobile telephone service and the demand for new advanced services may be met *in part* by the introduction of new technologies and continued spectrum management policies, additional spectrum is

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[13] *See FCC News Release*, "C and F Block Broadband PCS Spectrum Auction Raises Nearly $17 Billion for the U.S. Treasury" (Jan. 26, 2001); Rick Perera, "Europe's 3G Euphoria Ends with a Fizzle," The Industry Standard (Dec. 13, 2000) ("Europe's 3G Euphoria").

[14] *Fifth Competition Report* at 26 (emphasis added) (footnotes omitted).

[15] CTIA is now known as the Cellular Telecommunications and Internet Association.

[16] *See* CTIA, Petition for Rulemaking, RM-9920 (filed July 12, 2000) ("CTIA Petition").

crucial to facilitate the introduction of 3G wireless systems.[17] Commenters also cited the expected growth of mobile data services, especially for Internet capability, to support the need for additional spectrum.[18] BellSouth specifically noted that consumers and businesses are asking for more robust wireless offerings with greater broadband capabilities and throughput, which cannot be met today with the current generation of wireless products and services.[19] This is particularly true because many mobile wireless systems are capacity constrained by voice traffic needs.[20] As a result, BellSouth and others urged the Commission to act immediately in this proceeding. As shown below, time is of the essence.

C. Timing Is Critical to Preserve the Leadership Position of the United States in the Provisioning of 3G Services

Prompt Commission action to allocate and clear the spectrum necessary to support 3G services is necessary to ensure that the U.S. wireless industry remains a world leader in the development and implementation of advanced wireless technologies. The Commission has specifically recognized that the

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[17]*See, e.g.*, Comments in Response to RM-9920 of Nokia, Inc. at 2 ("[T]he need for additional spectrum for 3G, above and beyond current and planned future allocations, is driven by the continued increase in demand for existing mobile services and projected demand for high bit rate services envisioned for 3G."); Lucent Technologies, Inc. at 1 ("American consumers . . . will not fully benefit from the development of 3G services, unless sufficient and suitable spectrum is allocated to the Commercial Mobile Radio Services (CMRS) for use with more advanced mobile communications applications, including IMT-2000"); *see also* Comments of AT&T Wireless at 1-2; Motorola at 2-6; Verizon Wireless at 2-4; Reply Comments of Telecommunications Industry Association at 1.

[18]*See, e.g.*, Comments of AT&T Wireless at 2 (stating that recent research suggests that 1.2 billion users worldwide will use mobile data services by 2005); Motorola at 3 (citing estimates that there will be 60 million wireless Internet users in the United States by 2005).

[19]*See* Reply Comments of BellSouth Corporation at 2.

[20]The Commission invited comment on a broad range of advanced services that may be introduced over time. *See NPRM* at ¶ 18. The wireless market is extremely competitive and therefore Cingular is reluctant to divulge its market studies and technology plans. It is clear, however, that data speeds are expected to increase as envisioned by IMT-2000 and services such as full motion video are on the horizon.

United States' leadership role is tied to its ability to expeditiously provide the latest innovations to consumers, and that "[t]o maintain this position and remain at the forefront of technological change, the U.S. wireless industry must continue to grow" through the "implement[ation of] policies that continue to foster new developments."[21] CTIA, however, has warned that failure to keep pace with IMT-2000 spectrum requirements will harm U.S. consumers, manufacturers, and service providers.[22] This warning is well-founded.

Already, the United States is slipping behind its European counterparts. By the end of 2000, many European countries, including the United Kingdom, Germany, the Netherlands, and Italy, had already allocated spectrum for 3G services and held auctions to license that spectrum.[23] By January 2001, all of the European Union ("EU") member countries were required to issue licenses for 3G systems, as the Commission recognized in its Interim Report.[24] According to the overall schedule for the United States, however, the FCC is not scheduled to conduct an auction of 3G spectrum until June 15, 2002, and is not required to assign licenses for 3G spectrum until September 30, 2002 — well over a year and a half after its EU counterparts.[25] Even the FCC's Chief Economist has admitted that Europe has a "leg up" in

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[21]*NPRM* at ¶¶ 15, 18.

[22]*See* CTIA Petition at 2.

[23]*See* Rick Perera, "Europe's 3G Euphoria," *supra* note 13; *see also* FCC Staff Report Issued by the Office of Engineering and Technology, Mass Media Bureau, Wireless Telecommunications Bureau, and International Bureau: "Spectrum Study of the 2500-2690 MHz Band: The Potential for Accommodating Third Generation Mobile Systems," Interim Report, ET Docket No. 00-232, DA 00-2583 at 14 & n.15 (rel. Nov. 15, 2000) ("FCC Interim Report").

[24]FCC Interim Report at 14.

[25]FCC Interim Report, Appendix 1.1 at A-9.

allocating spectrum for 3G services.[26] As one lawmaker has noted, given the progress Europe has made in allocating spectrum for 3G, "[t]he United States cannot delay in facilitating the development of [3G] technologies" if it wants to ensure "that the U.S. remains the leader in technology innovation."[27]

II. PRINCIPLES THE COMMISSION MUST FOLLOW IN ALLOCATING NEW SPECTRUM

A. Consistent with ITU Projections, a Minimum of 160 MHz of Additional Clear Spectrum Is Required for 3G Services

Clearly, one of the most fundamental issues in this proceeding is the amount of additional spectrum that should be made available for use by new advanced mobile and fixed services, including 3G systems.[28] The 2000 World Radiocommunication Conference ("WRC-2000") adopted Resolution 223, which states that approximately 160 MHz of additional spectrum will be needed in order to meet the projected requirements of IMT-2000 in those areas where the traffic is highest by 2010.[29] The WRC specifically recognized that this 160 MHz of spectrum is needed in addition to other spectrum previously identified by the ITU for 3G services in 1992.[30] Cingular agrees that at least 160 MHz of additional spectrum below 3 GHz is needed to support the development of 3G services in the United States. As noted below, it is essential that this spectrum be cleared of any encumbrances by a date-certain, or the utility of the spectrum will be degraded.

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[26]Patrick Ross, "Congressmen Press for Next-Generation Wireless Services," CNET News.com (Aug. 29, 2000) (quoting FCC Chief Economist Gerald R. Faulhaber) ("Next-Generation Wireless Services").

[27]*Id.* (quoting Rep. Rick Boucher (D-VA)).

[28]*See NPRM* at ¶ 27.

[29]*See* WRC Resolution 223, *supra* note 10. Comments submitted in response to the CTIA Petition support the ITU resolution. *See, e.g.*, Comments in Response to RM-9920 of Motorola at 2.

[30]*See* WRC Resolution 223, *supra* note 10.

The Commission should be mindful that past efforts to predict wireless spectrum needs have fallen short. For example, during the infancy of cellular service, the Commission actually reduced its initial proposal of 75 MHz to 40 MHz, believing that anticipated demand did not support a 75 MHz allocation and that 40 MHz would provide sufficient capacity to the year 1990 in the largest cities.[31] By 1986, however — four years short of the original projection — it was clear that additional spectrum was required.[32] Accordingly, the Commission increased the 40 MHz allocation to 50 MHz, based in part on projections by Herschel Shosteck Associates that there would be about 1.5 million subscribers by 1990.[33] Again, these projections proved to be short-sighted, since by the middle of 1990 there were already nearly three times that amount and subscribership grew to exceed 5 million by the end of that year.[34] As NTIA has cautioned:

> Past efforts to forecast spectrum use have been only marginally successful. . . . [M]ost market forecasts for cellular telephone service failed to anticipate the phenomenal popularity and growth of this technology and thus the need for additional spectrum to support it.[35]

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[31] *See Land Mobile Radio Service, Second Report and Order*, 46 F.C.C.2d 752, 756-57 (1974). Moreover, the Commission's original proposal was to grant one 40 MHz license per market based on projected spectrum needs. *See Cellular Communication Systems, Report and Order*, 86 F.C.C.2d 469, 474-80 (1981) (subsequent history omitted). The band was split for competitive reasons, recognizing there would be serious capacity limitations which would need to be addressed in the future. *See id*.

[32] *See Amendment of Parts 2 and 22 of the Commission's Rules Relative to Cellular Communications Systems, Report and Order*, 2 F.C.C.R. 1825, 1826-27 (1986) ("*Cellular Report and Order*").

[33] *See id.* at 1827 & n.16 (1986) (citing Herschel Shosteck and Associates, The Demand for Cellular Telephone: 1985-1995 (Mar. 1986)).

[34] *See* CTIA, Semi-Annual Wireless Industry Survey, June 1985 to June 2000, *available at* <http://www.wow-com.com/wirelesssurvey/2000.pdf>.

[35] *See Comprehensive Policy Review of Use and Management of the Radio Frequency Spectrum, Notice of Inquiry*, 54 Fed. Reg. 50694, 50705-06 (1989).

By the early 1990s, it was apparent that an additional mobile radio service was required to satisfy strong consumer demand, and the Commission initiated its PCS proceeding.[36] The Commission set aside 120 MHz of spectrum for broadband PCS use, citing market forecasts of between 60-90 million subscribers by 2002.[37] Yet again, however, demand has exceeded market projections, and today there are already over 110 million wireless subscribers in the United States.[38] Cingular notes that not only has subscribership outstripped projections, wireless usage has also been more than anticipated.

Similarly, most estimates relating to the Internet have grossly underestimated its growth — whether measured in terms of users or e-commerce. As Yahoo, Inc. co-founder Jerry Yang aptly summarized: "Every time we've sat around the table and said 'OK, how fast is the Internet going to grow next year,' we've been wrong and we've been underestimating the growth."[39] Even Bill Gates underestimated Internet growth by referring to it as a fad in 1995 and 1996.[40] Today, there are more than 1 billion Internet users worldwide.

In this proceeding, the Commission is once again faced with the difficult task of projecting spectrum needs and growth rates. Based on past experience, the Commission should be careful not to underestimate these needs.

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[36]*See Amendment of The Commission's Rules To Establish New Personal Communications Services, Notice of Proposed Rule Making and Tentative Decision*, 7 F.C.C.R. 5676 (1992).

[37]*See Broadband PCS Second Report and Order*, 8 F.C.C.R. at 7710, 7724.

[38]*See* <http://www.wow-com.com>.

[39]*See* Paul Brent, "Winning Ways of an E-preneur: Underestimating the Net," Financial Post, C4 (June 23, 1999).

[40]*See, e.g.,* "Gates Talks Turkey About the 'Net," Computerworld (June 3, 1996).

B. There Must Be a Date Certain By Which Any Allocated Spectrum that Is Encumbered Is Cleared

The Commission has noted that whether the spectrum made available for 3G purposes is clear, shared, or segmented may impact the amount of spectrum required, and the amount of spectrum that may be made available.[41] Cingular emphasizes that it is critical that all spectrum made available for 3G purposes must be free of any encumbrances to be viable, as addressed more fully in the discussion of candidate bands in Section III, below. The sharing of spectrum, co-primary status, and protection zones are all problematic because they decrease the amount of usable spectrum. Accordingly, there must be a date certain by which encumbered spectrum is to be cleared. The Commission must also implement an accountability structure so that relocation costs are reasonable, and there must be certainty as to the facilities that the new licensee will be required to relocate.

C. Deployment of 3G Services and Technologies Should Not Be Delayed in the Pursuit of Global Harmonization

The Commission notes that global roaming has been one of the objectives for 3G systems and asks whether common roaming frequency bands should be pursued either globally or regionally to facilitate this objective.[42] Cingular encourages the Commission to seek to harmonize the spectrum bands the U.S. wireless industry will utilize for 3G services with the bands that other regions of the world will employ. This will facilitate increased roaming capabilities for customers as well as economies of scale in the production of equipment. Cingular notes, however, that global harmonization is desirable but appears very difficult due to the mismatched allocations for 3G services. It is of paramount importance that the deployment of 3G technologies and services in the United States not be delayed or compromised for the purpose of pursuing

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[41] *See NPRM* at ¶ 28.

[42] *See id.* at ¶ 24.

rudimentary harmonization that ultimately may take years to happen. Given its explosive growth, the wireless industry does not appear to have been harmed by missed economies of scale due to the current global mismatch of spectrum allocations.

D. The Commission Should Adopt a Flexible Allocation Approach that Takes into Account Potential Interference Scenarios

The Commission has proposed a flexible allocation approach for the provision of advanced wireless services, such as IMT-2000 or 3G systems.[43] Cingular supports a flexible allocation approach because it will allow licensees to determine, in response to market forces, the services to be offered and the technologies to be used in providing those services. The Commission need not define specifically what constitutes a "3G" or "advanced" wireless service. In general, only minimal service-specific rules should be required, such as requirements to control RF interference and protect against human exposure to RF energy.[44] However, when adopting service rules under flexible allocation, the FCC must be mindful of potential co-channel or adjacent channel interference between fixed and mobile services.[45] In addition, it would be inadvisable to consider imposing construction requirements for any bands allocated to 3G in which some incumbent users may not relocate immediately.[46]

Consistent with its market-based flexible allocation approach, the Commission also proposes not to designate specific technical standards. The Commission notes that the ITU has developed worldwide

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[43]*See id.* at ¶13.

[44]*See* FCC Interim Report at 36.

[45]For example, it is Cingular's understanding that a government/industry working group has determined that co-channel sharing between Multichannel Multipoint Distribution Service ("MMDS") and 3G systems is not possible even between neighboring license areas.

[46]As noted in Section II.B above, there must be a date certain by which any of the selected bands are cleared of incumbent uses.

standards for 3G wireless devices, and has defined five radio interface standards for the terrestrial component of IMT-2000.[47] The Commission proposes to take a flexible approach to technical standards and to refrain from mandating a particular type of technology, leaving this outcome to the marketplace.[48] Cingular agrees that the FCC should allow the market to determine the services and the technology behind those services. In particular, the IMT-2000 standards are sufficient for planning the services of advanced wireless systems as long as sufficient spectrum is made available. In addition, Cingular believes that the market should determine a carrier's technology choice, *e.g.*, Time Division Duplex ("TDD"), Frequency Division Duplex ("FDD"), *etc*. The wireless marketplace has been well served by the Commission's hands-off policy as it relates to technology.

E. The Spectrum Cap Should Not Apply to New 3G Spectrum Allocations

As noted above, the availability of additional spectrum is essential to the development of 3G wireless technologies and the resulting deployment of new and advanced wireless services. Clearly, it would make no sense to apply the 45 MHz CMRS spectrum cap to new spectrum allocations that are intended to allow existing wireless carriers to roll-out a much broader range of services than can be offered given present-day spectrum limitations.[49] Applying a 45 MHz cap to substantial new blocks of spectrum would effectively foreclose existing providers of wireless service in the United States from having access to 3G spectrum, thus preventing them from offering the new services that IMT-2000 envisions. It would also place an arbitrary 45 MHz limit on the amount of spectrum available to new entrants, and would

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[47] *See* ITU, "Detailed Specifications of the Radio Interfaces of IMT-2000," Recommendation ITU-R M.1457 (2000).

[48] *See NPRM* at ¶ 21.

[49] *See* 47 C.F.R. § 20.6(a).

likewise prevent the new entrants from offering a full range of services. Indeed, it may not even be *possible* to provide the more spectrum-intensive high-speed Internet access and streaming video services to multiple subscribers on a commercial basis within 45 MHz of spectrum — and a carrier managing to provide such services even to a handful of subscribers would clearly not have any capacity available to provide other, narrower-bandwidth services, such as voice, messaging, and switched data. The existing 45 MHz CMRS spectrum cap should therefore not be applicable to 3G spectrum.[50]

A bipartisan coalition in Congress has been urging the FCC for some time to eliminate the cap due to concerns that it will inhibit the growth of 3G services and leave the United States even further behind Europe and Asia.[51] House Internet Caucus Co-Chair Rick Boucher (D-VA) has warned that the spectrum cap will preclude established providers from having the access to spectrum needed to provide 3G service. Given the high-spectrum demand for 3G services and the increasing competition in the wireless market, Boucher has said that "the caps, frankly, don't make any sense."[52] The FCC's current waiver approach, whereby any wireless provider can apply for a waiver of the cap in a particular area if it can demonstrate that it cannot otherwise provide new services, is unworkable and inadequate. According to Representative Boucher, "I don't think we should be burdening businesses or the Commission [with waiver requests]."[53]

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[50]*See, e.g.*, Reply Comments in Response to RM-9920 of BellSouth Corporation at 5 (Sept. 12, 2000); Comments in Response to DA 98-1703 of BellSouth Corporation at 16-19 (Sept. 30, 1998); SBC Wireless, Inc. at 6-7 (Sept. 30, 1998).

[51]*See* Patrick Ross, "FCC Again Will Consider Lifting Wireless Ownership Caps," CNET News.com (Jan. 24, 2001).

[52]*Id.* (quoting Rep. Rick Boucher (D-VA)).

[53]*See* Patrick Ross, "Next-Generation Wireless Services," *supra* note 26 (quoting Rep. Rick Boucher (D-VA)).

"There's no real standard" for qualifying for a waiver, so "the process would be very arbitrary."[54] Cingular agrees. Accordingly, because application of the cap to 3G services would be contrary to the entire purpose of any allocation for expanded wireless service, it should not be applied.

III. CONSIDERATIONS REGARDING POTENTIAL BANDS FOR ADVANCED SERVICES

As noted above, the Commission must allocate at least 160 MHz of additional *clear* spectrum below 3 GHz for competitive advanced wireless services in order to create the conditions necessary for these services to flourish. Cingular agrees with the Commission's tentative conclusion that no further allocations should be made in bands in which advanced services currently can be provided, given the heavy usage in these bands. The bulk of the spectrum allocated for 3G services should come from one of two bands — the 1710-1850 MHz band or the 2500-2690 MHz band. The United States was the vocal proponent for including these bands in the 3G resolution at WRC-2000. If the United States fails to use either of these bands to satisfy its 3G needs, its credibility with regard to international spectrum allocations will be seriously harmed.

The Federal Government spectrum at 1710-1850 MHz offers great potential for advanced services if it can be cleared of the incumbent Federal Government use. Cingular does not believe that 3G services can *share* this spectrum with the incumbent government users, but offers below some ideas that may help to overcome the difficult problems associated with clearing this band. If, however, clearing this band proves impractical, the bulk of 3G spectrum should be located in the 2500-2690 MHz band. Cingular's suggestions regarding the various bands identified in the *NPRM* appear below.

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[54] *Id.*

A. Currently-Allocated Spectrum Bands

Cellular, PCS and SMR Bands. As the Commission noted in the *NPRM*, the 806-960 MHz and the 1850-1910/1930-1990 MHz bands, which had been identified by the ITU for possible 3G systems, are currently used by cellular, Specialized Mobile Radio ("SMR") and broadband PCS licensees, as well as by others.[55] Some licensees have initiated mobile data services in these bands, which is allowable under the current allocations and rules. Though current cellular, SMR and PCS licensees are constantly striving to improve spectrum efficiency to meet growing capacity demands and to initiate new services, the currently-allocated spectrum in these bands is being used to meet current capacity demands.

In the wireless industry, projections repeatedly underestimate the amount of spectrum needed to meet expected subscriber demand.[56] In the current spectrum-scarce environment, cellular and PCS carriers are constantly seeking more efficient methods to meet growing capacity demands. As noted above, Cingular believes that all of the recently auctioned spectrum in the SMR and PCS bands is likely to be used by carriers solely to meet capacity demands of 2G systems and new entrants to compete with the capacity-constrained incumbents with their own 2G systems.[57] Moreover, despite the conversion to digital technologies by cellular carriers, the Commission's analog service requirement continues to inhibit the most efficient use of spectrum.[58] For these reasons, and because of the heavy use of these bands by other

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[55] *See NPRM* at ¶¶ 34-35. Licensees in the Private Land Mobile Radio Service, the Location Monitoring Service, the Air-Ground-Radio-Telephone Service, as well as Multiple Address System licensees and unlicensed devices, also inhabit these bands.

[56] *See supra* discussion Section II.A.

[57] *See supra* discussion Section I.A.

[58] *See supra* discussion Section I.A.

services, Cingular agrees with the Commission's tentative conclusion not to make any additional allocations for advanced wireless services in the 806-960 MHz and 1850-1910/1930-1990 MHz bands.

700 MHz Band. The Balanced Budget Act of 1997 requires the band of spectrum at 746-806 MHz, currently used for broadcasting on UHF Channels 60-69, to be reallocated and licenses to be auctioned.[59] Twenty-four megahertz of the band (764-776 MHz and 794-806 MHz) were reallocated to fixed and mobile services for public safety use, while the remaining thirty-six megahertz (746-764 MHz and 776-694 MHz) were reallocated for commercial fixed, mobile and broadcast use.[60] Television broadcast stations, however, are permitted to continue using this band until at least December 31, 2006, and possibly much longer.[61]

A six megahertz "guard band" has been established within the 700 MHz band within which cellular-type architectures are prohibited. That spectrum obviously is not appropriate for advanced wireless services. As to the remaining 30 MHz of commercial spectrum in this band (licenses for which are scheduled to be auctioned beginning September 6, 2001), Cingular has determined that the incumbency of television broadcast stations poses a major obstacle to possible 3G use. Unless and until procedures are adopted under which a well-defined path to clearing this spectrum is discernable, this band may be unsuited for almost any commercial fixed or mobile service. The Commission therefore should not consider this 30 MHz band as a part of a solution to be arrived at in this proceeding.

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[59] *See* Balanced Budget Act of 1997, Pub. L. No. 105-33, § 3003, 111 Stat. 266 (1997) ("BBA-97").

[60] *See Reallocation of Television Channels 60-69, The 746-806 MHz Band, Report and Order*, 12 F.C.C.R. 22953 (1998).

[61] *See* 47 U.S.C. § 309(j)(14).

B. Additional Candidate Bands

1. Federal Government Bands

The broad-scale deployment of 3G services ideally would include the bands being considered for reallocation from Federal Government use to non-Federal Government use. The 1710-1755 MHz band has previously been identified for reallocation by the Commission and was identified by the ITU for possible use by 3G systems. The ITU also has identified the 1755-1850 MHz band for possible use by 3G systems. Making this 140 MHz of spectrum usable for deploying advanced wireless services would facilitate partial harmonization with Region 2 and possibly other countries, help to jump-start the manufacture of 3G equipment and assist the United States in maintaining its role as the world's technology leader.

This spectrum is currently employed by the Federal Government for a variety of important uses that support U.S. military activities.[62] Cingular is engaged in the cooperative government-industry working

[62]The 1710-1755 MHz band is used for point-to-point microwave communications; military tactical radio relay; airborne telemetry; and precision guided munitions. The 1755-1850 MHz band is currently used by the Federal Government for space telecommand, tracking, and control ("TT&C," or space operations); medium capacity fixed microwave services; tactical radio battlefield networks; and aeronautical mobile applications, including telemetry, video, target scoring systems, and precision munitions. Fixed links are used for voice, data, and/or video communications where commercial service is unavailable, excessively expensive, or unable to meet required reliability. Applications include law enforcement; emergency preparedness; supporting the National air space system; military command and control networks; and control links for various power, land, water, and electric-power management systems. Other specified fixed links include video relay, data relay, and timing distribution signals. A critical system in the band is the United States Air Force Space Ground Link Subsystem ("SGLS"). This system, via Earth-to-space uplinks in the 1761-1842 MHz band, controls U.S. military satellites, including satellites used for telecommunications, intelligence gathering, missile warning, weather reporting, surveillance, and reconnaissance; the Global Positioning System ("GPS") satellite constellation; and satellites of other Government agencies and U.S. allies. These satellites provide space-based capabilities that are critical to the execution of all U.S. military operations. The satellites already in use that are associated with the SGLS are not capable of being modified to operate to accommodate another frequency. SGLS operations must continue to control these in-orbit assets for the duration of their life spans, which for some operations may extend beyond 2017. Air Combat Training ("ACT") systems are another military use of this band. ACT

group process that is studying the possibility of government and industry sharing the use of these bands. While no conclusions have yet been reached, it *does not* appear likely that broad-scale sharing can be made to work successfully for both sides. Cingular therefore regards the government spectrum as a viable possibility for advanced wireless services only if the bands are virtually cleared and most government uses are relocated to other bands. The Commission therefore should not allocate this band for advanced wireless services if such an allocation is based on an assumption that shared use is feasible.

Cingular recognizes the significant potential difficulties in clearing these bands so that they can realistically be used for advanced fixed and mobile wireless services. Although the 1710-1755 MHz band has been designated for reallocation from Federal Government to primary non-Federal Government use,[63] and NTIA has identified this spectrum for transfer to the Commission for mixed use (effective in 2004) to satisfy the requirements of OBRA-93, the statutory scheme permits significant government use of the band to continue in perpetuity. Fixed microwave stations used by or in support of Federal Power Agencies are exempt from reallocation and are permitted to continue to operate with protection from interference, and 17 Department of Defense sites are protected indefinitely for continued military use. While the power sites are mostly located in rural areas, the military sites are predominately located in large population centers. If these military facilities are not removed to more remote areas, the large coordination sharing zones required will make 3G mobile systems inoperable in urban areas where demand is expected to be greatest, thereby reducing the viability of this band for advanced wireless services.

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systems are complex by the nature of their operations, as both fixed and aeronautical mobile equipment is employed to support high-intensity fighter aircraft. The 1755-1850 MHz band is also used by U.S. airborne attack systems to enable precision munitions capabilities.

[63] *See* Omnibus Budget Reconciliation Act of 1993, Pub. L. No. 103-66, 107 Stat. 312 (1993) ("OBRA-93"); BBA-97, *supra* note 59.

NTIA is currently deciding whether to make the 1755-1850 MHz band available for non-Federal Government use.[64] Based on Cingular's current understanding, however, the cost, complexity and uncertainties relating to segmentation for relocation of Department of Defense facilities in the 1755-1850 MHz band appear difficult to overcome. The following factors lead Cingular to believe that the 1755-1850 MHz band may not work for 3G systems:

- According to the Department of Defense study, there are 6 major systems operating in this band. These systems are important to national security and include telecommand of the GPS satellite constellation, aerial combat training systems, and secure tactical battlefield communications systems.
- In addition to the six major systems, literally hundreds of smaller military systems are deployed in this band throughout the country.
- The importance and sheer number of systems in this band make sharing and segmentation for relocation schemes extremely complex.
- The classified nature of virtually all systems operating in this band prevents private industry from performing independent analyses of relocation strategies and costs.
- Statements by the Department of Defense indicating that relocation will take considerable time.

Cingular is fully aware of the daunting nature of the difficulties inherent in relocating government facilities in either of these two bands. Furthermore, even if these obstacles can be overcome, Cingular is concerned about whether the Federal Government and private industry can successfully negotiate the relocation of Federal Government facilities to other spectrum bands. Information regarding many of these facilities may be classified, and the Department of Defense legitimately may be concerned about disclosing such information in the course of negotiating relocation terms with new licensees. Discussions regarding

[64]The NTIA's final report as to this band is expected to be released by the end of March 2001.

the relocation of sensitive military communications facilities necessarily may include matters about which the Department of Defense understandably would have national security concerns.

Nonetheless, Cingular believes that a solution to the government incumbency problem — one which offers the Federal Government users sufficient funding for relocation as well as protection from the disclosure of sensitive information — can be found. Relocation negotiations (including determination of a date certain for vacating the band) could be conducted entirely between government agencies in accordance with a procedure to be developed with industry input. In this way, private interests would not have to seek classified information from the Department of Defense. Such a relocation process could include a mechanism under which revenues to reimburse relocating agencies would come directly from revenues generated in an auction for licenses to use the cleared frequencies. Such a procedure likely would require that Congress amend the Communications Act to authorize the diversion of auction revenues in this manner, but it would be far preferable to having the wireless industry negotiate relocation terms with government agencies, especially given the sensitive nature of information in this band. Cingular urges the Commission to consider recommending to Congress a proposal along these lines.[65]

Allowing relocation costs to be diverted directly from auction revenues would not only simplify the process for relocating Federal Government users from former government spectrum and ameliorate national security concerns inherent in negotiations between government and industry, it would eliminate from the auction any preference toward a bidder who may perceive itself to be in a better position to negotiate with the incumbent Federal Government users. Thus, each prospective bidder would be free to value the

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[65]In the *NPRM*, the Commission noted that relocation of Government entities in this band would require new licensees to compensate the Government entity in advance for relocation costs. *NPRM* at ¶¶ 40, 48. Cingular's suggestion of new legislation grows out of its concern that, given the unique character of the Government's incumbent use of the band, such negotiations could not be conducted in a manner and a time frame that would be satisfactory to both sides.

licenses to be auctioned solely on the basis of the value of cleared spectrum to it, and the auction would be more likely to achieve the Commission's principal goal for competitive bidding — that of awarding licenses to the parties who value them most highly.

Cingular believes that this legislative proposal could help to resolve some of the difficulties associated with clearing the Federal Government bands. If, however, the problems associated with these bands prove to be insurmountable and new advanced wireless services cannot be provided over clear spectrum within a reasonable time frame, the Commission must turn to other bands over which it has greater control. In addition, if Congress has not acted on these proposed legislative changes by the end of 2002, the FCC need to be prepared to act on the 2500-2690 MHz band.

2. The 2110-2150 and 2160-2165 MHz Bands

These bands, which have been allocated on a primary basis for Fixed and Mobile Services, in 1992 were designated for reallocation to new and innovative services as part of the Commission's *Emerging Technologies* docket.[66] The users of this band are predominantly Fixed Microwave licensees under Part 101 of the Commission's Rules and licensees in the Public Mobile Services under Part 22. Many of these licensees have secondary status because they either were licensed subsequent to the *Emerging Technologies First Report and Order* in 1992 or made major modifications to stations with primary status.[67] In a separate proceeding in 1998, the Commission proposed that these bands be reallocated for

[66]*See Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications Technologies, First Report and Order and Third Notice of Proposed Rule Making,* 7 F.C.C.R. 6886 (1992).

[67]*See NPRM* at ¶ 51.

various services, including emerging technologies.[68] More recently, the Commission has stated its intention to propose using these bands for advanced fixed and mobile services.[69]

Cingular believes that advanced wireless systems can successfully be deployed in these bands. This spectrum could be paired with other spectrum[70] or could be allocated as an unpaired band that may be particularly well-suited for TDD systems.[71] Because incumbents in these bands generally consist of commercial fixed links, the relocation issues appear to be similar to those encountered in the licensing of the PCS bands, and are not nearly as complex and cumbersome as those presented in the Federal Government bands. Cingular concurs with the Commission's stated belief that spectrum reallocated in the 4 GHz, 6 GHz, 10 GHz and 11 GHz bands could accommodate relocating incumbents from the 2110-2150 MHz and 2160-2165 MHz bands, and that alternative transmission media may also be available as comparable facilities to which incumbent could be relocated.[72]

For these reasons, Cingular believes that the 2110-2150 MHz and 2160-2165 MHz bands should be reallocated for advanced fixed and mobile services. Although the 2160-2165 MHz band is not subject

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[68] *See Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service, Memorandum Opinion and Order and Third Notice of Proposed Rule Making and Order*, 13 F.C.C.R. 23949, 23972 (1998). The Balanced Budget Act of 1997 requires that licenses for the 2110-2150 MHz band be assigned by auction by September 30, 2002. *See* BBA-97, *supra* note 59, at § 3002(c).

[69] *See Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium, Policy Statement*, 14 F.C.C.R. 19868 (1999).

[70] Cingular notes, however, that it would be inadvisable to pair this spectrum with the 1710-1755 MHz band, also set for auction, because equipment costs are likely to be high and, once again, the U.S. would not be in harmonization for 3G services.

[71] Interference studies have shown that deployment of TDD and FDD systems in the same band would be highly problematic. *See* TIA TSB 84A.

[72] *See NPRM* at ¶ 56.

to the September 30, 2002 auction timetable imposed by BBA-97, Cingular supports the Commission's proposal to include licenses to use this band with those for the 2110-2150 MHz band in the same auction.

3. The 2500-2690 MHz Band

The 2500-2690 MHz band was identified by the ITU as a candidate band for IMT-2000 services, and it is considered by the Conférence Européenne des Administrations des Postes et des Télécommunications ("CEPT") to be a prime candidate band for IMT-200 expansion after phasing out of existing usages. Reallocation of this band in the United States for advanced wireless services therefore would create greater economies of scale and scope in the manufacture of equipment, which could spur more rapid development of new innovative services at a lower cost to consumers. If the 1710-1850 MHz bands cannot be completely cleared of all government operation, Cingular believes that the 2500-2690 MHz band holds the most promise for advanced wireless services. However, this promise may be realized only if most of the incumbent use is refarmed and relocated.

The 2500-2690 MHz band is used primary by two non-Federal Government services, MMDS and Instructional Television Fixed Service ("ITFS"). Most of the band is assigned to ITFS licensees, almost all of whom derive revenues to support their educational missions by leasing portions of their licensed spectrum to MMDS licensees.

If it is possible to relocate ITFS licensees to another band suitable for point-to-multipoint systems in which they would enjoy equal or better ITFS coverage and capacity, Cingular believes that improvements in technology could enable MMDS licensees to increase the spectral efficiency of their operations, enabling them to provide the same services in their originally-allocated 70 MHz of spectrum. This scenario would free 120 MHz of spectrum for reallocation to advanced wireless services. The

widespread existence of ITFS/MMDS leases, however, interweaves the interests of the ITFS and MMDS communities; therefore, the Commission must study the feasibility of separating these two services.

Cingular fully appreciates that refarming and relocating MMDS and ITFS licensees may not be easy. However, unless the legislative proposal outlined above is enacted, Cingular believes that the relocation and segmentation of the ITFS and MMDS bands would be dramatically simpler and easier to accomplish than the clearing of the 1.7 GHz government bands. There are principally only two services now residing in the 2500-2690 MHz band, compared with hundreds of disparate uses being made by Federal Government users in the 1.7 GHz band. Further, because MMDS and ITFS operations do not involve classified systems, the relocation coordination process would be far less cumbersome and costly, with clearer spectrum as the end result.

CONCLUSION

For the foregoing reasons, the Commission should expeditiously adopt 3G spectrum policies consistent with the views expressed by Cingular herein.

Respectfully submitted,

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